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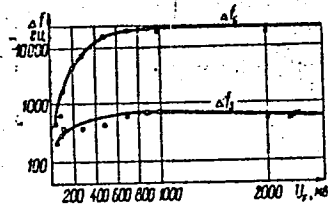


Рис. 5

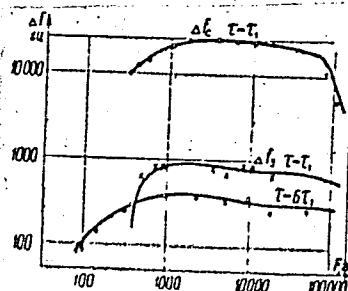


Рис. 6

Card 3/4

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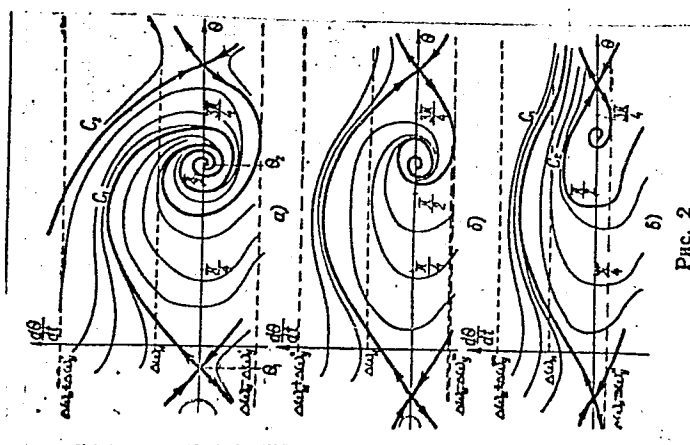


Рис. 2

Card 4/4

36000  
S/108/62/017/004/001/010  
D288/D301

9.3272

AUTHOR: Tsikin, I.A., Member of the Society (see Association)

TITLE: Interference immunity of SSB and DSB communication systems

PERIODICAL: Radiotekhnika, v. 17, no. 4, 1962, 3 - 12

TEXT: J.P. Costas' claim that a suppressed carrier DSB AM transmission with two-phase synchronous detector reception achieves essentially same signal-to-noise performance as SSB operation is submitted to a critical analysis and shown to be erroneous. Idealized synchronous detectors and low pass filters are assumed. Elementary Fourier analysis shows that the integrator of the two-phase synchronous receiver in the case of correct  $90^\circ$  phase relationship does not produce a larger voltage than a single sideband channel, a fact often disregarded. Autocorrelation- and cross-correlation functions for random noise are written down and yield noise power in each channel and in the output integrator. In practical cases, where the phase difference between oscillator and suppressed carrier is

Card 1/3

Interference immunity of SSB and ...

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D288/D301

negligible, a simple expression for signal-to-noise power is obtained and shown to be half of the SSB system. Interference immunity is investigated next, interfering signals being assumed as neighboring channel signals of equal output. Formulas are quoted for minimal and normalized r.m.s. error  $\gamma$ , for the general case of

$\int_0^\infty F_0(\omega) d\omega = 1$  and then for Costas' proposed case  $F_{\text{signal}} = F_{\text{interfere}}$ .

$= \frac{\beta}{\pi} \frac{1}{\omega^2 + \beta^2}$  where  $F_\beta = 0.5 F(0)$ . Six cases are then considered,

being single channel synchronous DSB, twin-phase DSB and SSB, all with DSB interference, and twin-phase DSB, upper and lower SSB with SSB interference. The results are shown in diagrams, plotting  $\gamma$  vs.  $\nu$ , where  $\nu$  is the ratio of frequency separation of wanted-to-unwanted signals to  $\beta$ , and indicate generally the superiority of SSB reception. It is admitted that DSB operation has some advantages because of its synchronizing system's higher noise immunity and its higher transmitter efficiency. There are 7 figures. The most important English language references read as follows: J.P. Costas, Proc.

Card 2/3

Interference immunity of SSB and ...

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D288/D301

I.R.E., v. 44, no. 12, 1956; H.W. Bode, C.E. Shannon, Proc. I.R.E.,  
v. 38, no. 4, 1950.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i  
elektrosvyazi imeni A.S. Popova (Scientific and Tech-  
nical Society of Radio Engineering and Electrical Com-  
munications imeni A.S. Popov) [Abstractor's note: Name  
of the Association taken from first page of journal].

SUBMITTED: May 4, 1961

7

Card 3/3

MODEL', Z.I.; ARZUMANOV, V.N.; TSIKIN, I.A.

Two-band radio communication without carrier frequency. Radio-  
tekhnika 17 no.6:42-53 Je '62. (MIRA 15:5)

1. Deystvitel'nyye chleny Nauchno-tekhnicheskogo obshchestva  
radiotekhniki i elektrosvyazi imeni Popova.  
(Radio)

L 14924-63  
Pl-4/Pn-4

EWT(d)/EWT(1)/BDS/EEC-2/EED-2/EO-2 AFTTC/ASD/ESD-3

ACCESSION NR: AP3004085

S/0108/63/018/007/0003/0013

AUTHOR: Tsikin, I. A. (Member of the Society, see "Association")

TITLE: Conditions of maximum noise immunity in systems having active intervals with indefinite signal phase

SOURCE: Radiotekhnika, v. 18, no. 7, 1963, 3-13

TOPIC TAGS: noise immunity

ABSTRACT: L. M. Fink supposed (Radiotekhnika, v. 14, nos. 1 and 9, 1959) that the orthogonal, in an amplified sense, signal systems ensure maximum noise immunity in a channel with an indefinite signal phase and an additive fluctuation noise. The article offers accurate mathematical proof of the above theorem for a particular case of binary systems and Raleigh fadings. Further, some consideration is given to the optimum choice of signals in non-Raleigh-fading cases and to the noise immunity of multiposition systems. "In conclusion,

Card 1/2

L 14924-63

ACCESSION NR: AP3004085

the author expresses his deep gratitude to Prof. L. M. Fink for his interest in the work and for his comments and advice used in writing this article."  
Orig. art.has: 39 formulas.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi (Scientific and Technical Society of Radio Engineering and Electrocommunication)

SUBMITTED: 28Dec62

DATE ACQ: 05Aug63

ENCL: 00

SUB CODE: CO

NO REF SOV: 004

OTHER: 001

Card 2/2



L 42907-66 EWT(1) JM

ACC NR: AR6015861

SOURCE CODE: UR/0275/65/000/012/A022/A022

AUTHOR: Tsalkin, B. G.

TITLE: An approximate nonlinear theory for a traveling wave tube *25*

49  
B

SOURCE: Ref. zh. Elektronika i yeye primeneniye, Abs. 12A152

REF SOURCE: Tr. molodykh uchenykh. Saratovsk. un-t. Vyp. fiz., Saratov, 1965, 15-22

TOPIC TAGS: traveling wave tube, nonlinear theory, approximation method

ABSTRACT: An investigation is made of an approximate nonlinear theory of a TWT, based on the solution of the known self-consistent system of Weinstein nonlinear equations, using representations of the distribution function of the amplitude of the field along the tube in the form of a series on the odd degrees of the input signal. The space charge and the distributed attenuation was not taken into account. A comparison of the efficiency of the TWT, obtained by the exact and the approximate methods with three terms of the series taken into account, showed good qualitative agreement. [Translation of abstract] Bibliography of 8 titles. A. D.

SUB CODE: 09

Card 1/1 *ldh*

UDC: 621.385.632

<p><i>TSIKIN, S. P.</i></p> <p><i>Ca</i></p> <p>Insecticide. S. P. Tskin and K. F. Frel. Russ. 40,748, April 30, 1936. To a water emulsion of heavy coal-tar oils and saponified rosin is added an emulsion of residues of the rectification of benzene hydrocarbons contg. coumarin resins and aromatic sulfonic acids.</p>																									
<p>ASAC-SEA METALLURGICAL LITERATURE CLASSIFICATION</p>																									

TSIKIN, S. P. B-I-2

Active clays as contact catalysts of polymerization processes. I. J. Fursov and S. P. TSIKIN. Ural active clays. I. J. Fursov and S. P. TSIKIN (J. Appl. Chem. Russ., 1934, 9, 61-73).--(Certain Ural clays (activated at 2500°) are as active as is Floridin in promoting the polymerization of unsaturated components of crude gasoline, in the liquid or gaseous phase. The polymerides obtained from indene, styrene, cyclopentadiene (I), and polyisopentadiene (II) are utilizable in the lacquer industry. 0.06% of (I) or (II) is detected in 2 ml. of gasoline by adding 2 ml. of  $Ac_2O$  and 2 ml. of 50%  $H_2SO_4$ , when a bluish-red coloration is obtained. The polymerization of pinene by clay is inhibited by peroxides formed by exposure to air. R. T.

ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION

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TSIKINOVSKAYA, S.L.; DEMIDOV, Yu.N.; FEIDOROVA, Ye.M.

Potentialities for reducing the cost of cast iron. Stal' 23  
no.10:942-944 0 '63. (MIRA 16:11)

TSIKKEL', L.M.

Using aerophotographic data in geological mapping on a 1:50 000  
scale. Sov. geol. 3 no. 9:122-127 S '60. (MIRA 13:11)

1. Vsesoyuznyy aerogeologicheskii trest.  
(Aeronautics in geology)

BATURIN, V.V., glav. red.; BRYUKHANOV, V.N., red.; TSIKKEL', L.M., red. VOSKRESENSKIY, Ye.N., red.; IL'INA, N.S., red.; LEONOV, B.N., red.; LUNGERSGAUZEN, G.F., red.; MINOKAYA, V.M., red.; MORALEV, V.M., red.; RAKOVETS, O.A., red.

[Methods for the interpretation of the materials of aerial photography in geological studies; materials] Metody deshifrirovaniia aerofotomaterialov pri geologicheskikh issledovaniyakh; materialy. Glav. red. V.V. Baturin, V.N. Briukhanov, L.M. Tsiikel'. Moskva, Izd-vo "Nedra," 1964. 150 p. (MIRA 17:7)

1. Vsesoyuznyy seminar po geologicheskomu deshifrirovaniyu pri geologicheskikh issledovaniyakh, Moscow, 1961.

TSIKKEL' L. M.

PLATE I  
DATION  
SOV  
SOV

Abstract: This issue of the Transactions of the Laboratory of Aerial Survey Methods contains the second part of materials presented at the 7th All-Union Interdepartmental Conference on Aerial Surveying, which took place in Leningrad, November 25 through December 1, 1956. Articles treat problems dealing with the execution and application of aerial survey methods in geological, geomorphological, and geophysical investigations. Special attention is directed to aerial survey methods in geology and geomorphology. The techniques of joint physical work under different conditions. The techniques of joint reference aerostatic prospecting and aerial photography are described. References accompany individual articles.

Editorial Commission: V. G. Platonov, Tech. Ed.; O. A. Guryev; Editorial Commission: V. G. Platonov, Corresponding Member, Academy of Sciences USSR; A. A. Logunov, V. P. Mikheevichukin (Resp. Ed.), and S. S. Sokolov.

PURPOSE: This publication is intended for photogrammetrists, geologists, geomorphologists, and other scientific and technical personnel concerned with aerial photography.

CONTENTS: This issue of the Transactions of the Laboratory of Aerial Survey Methods contains the second part of materials presented at the 7th All-Union Interdepartmental Conference on Aerial Surveying, which took place in Leningrad, November 25 through December 1, 1956. Articles treat problems dealing with the execution and application of aerial survey methods in geological, geomorphological, and geophysical investigations. Special attention is directed to aerial survey methods in geology and geomorphology. The techniques of joint physical work under different conditions. The techniques of joint reference aerostatic prospecting and aerial photography are described. References accompany individual articles.

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TSIKLAURI, D.S., dotsent, kand.tekhn.nauk; BYKOV, V.M., kand.tekhn.nauk,  
red.; VINOGRADOVA, G.M., red.izd-va; BOROVNEV, N.K., tekhn.red.

[Hydraulic compressors] Gidrokompresory. Moskva, Gos.izd-vo  
lit-ry po stroit., arkhitekt. i stroit.materialam, 1960. 70 p.  
(MIRA 13:6)

(Compressors)

TSIKLAURI, David Semenovich, dots., kand. tekhn. nauk; VOLOD'KO,  
I.F., kand. tekhn. nauk, nauchn. red.; SHERSHUKOVA,  
M.A., red.

[Water supply for fields and pastures] Polevoe i past-  
bishchnoe vodosnabzhenie. Moskva, Stroizdat, 1964. 162 p.  
(MIRA 17:5)

MOSTKOV, Mikhail Abramovich, prof. [deceased]; TSIKLAVI, D.S.,  
red.; GIORGADZE, O.N., red. izd-va; BOKERIYA, E.B., tekhn.  
red.

[Elements of the theory of water supply] Elementy teorii  
vodosnabzheniia. Tbilisi, Izd-vo AN Gruz.SSR, 1963. 139 p.  
(MIRA 16:11)

(Water supply)

TSIKLAURI, D.S., kand. tekhn. nauk (Tbilisi)

Using a jet hydrocompressor to ventilate production space. Vod.  
i san. tekhn. no. 3:21-24 '64 (MIRA 18:2)

TSIKLAURI, David Semenovich, dots., kand. tekhn. nauk; VOLOD'KO,  
I.F., kand. tekhn. nauk, nauchn. red.; SHERSHUKOVA, M.A.,  
red.

[Water supply in fields and pastures] Polavoe i pastbishch-  
noe vodosnabzhenie. Moskva, Stroiizdat, 1964. 162 p.  
(MIRA 17:9)

TSIKLAURI, G. V., and USANOV, V. V.

"On the Analytical Determination of Effective Surfaces in  
Channels at the Presence of Heat Transfer and Friction."

Report submitted for the Conference on Heat and Mass Transfer,  
Minsk, BSSR, June 1961.

TSIKLAURI, G.V.; USANOV, V.V.

Heat transfer in a pipe at high speeds of air flow. Inzh.-fiz.  
zhur. no.11:48-51 N '60. (MIRA 13;11)

1. Moskovskoye otdeleniye TSentral'nogo kotloturbinnogo instituta  
im. I.I.Polzunova i Vsesoyuznyy nauchno-issledovatel'skiy institut  
kislородnogo mashinostroyeniya, Moskva.  
(Pipe--Hydrodynamics) (Thermodynamics)

TSIKLAURI, G. V. and USANOV, V. V.

"The problem of the analytical determination of the effective surfaces in channels involved with heat-exchange and friction."

Report presented at the 1st All-Union Conference on Heat- and Mass-Exchange, Minsk, BSSR, 5-9 June 1961.



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10.4100

11.9200

S/170/60/003/011/004/016  
B019/B056

AUTHORS: Tsiklauri, G. V., Usanov, V. V.

TITLE: The Problem of Heat Exchange in a Tube at High Air Velocities 21

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 11, pp. 48-51

TEXT: The one-dimensional flow of a compressible gas in a tube is measured under the assumption of a convective heat exchange with the wall. The authors succeeded in setting up a linearized differential equation, which describes the motion of the gas. The solutions were checked by means of data experimentally determined by B. S. Pezovan at the MEI, where the local heat exchange in the case of a turbulent flow was investigated. The thin-walled tubes had a diameter of 15.95 mm, and a length, which amounted to the 29.5-fold of the diameter. The temperature of the air flow was changed between 150 and 400°K, whereas the wall temperature was kept constant at 300°K. As may be seen from the comparison of the results, the relations of the hydrodynamic theory for the heat exchange

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85433

The Problem of Heat Exchange in a Tube  
at High Air Velocities

S/170/60/003/011/004/016  
B019/B056

within the Mach number range of from 0.5 to 3 are correct and may be used  
for practical calculations. There are 1 figure and 5 Soviet references.

ASSOCIATION: Moskovskoye otdeleniye Tsentral'nogo kotloturbinnogo  
instituta im. I. I. Polzunova (Moscow Branch of the Central  
Steam Turbine Institute imeni I. I. Polzunov). X  
Vsesoyuznyy nauchno-issledovatel'skiy institut kislородnogo  
mashinostroyeniya, g. Moskva (All-Union Scientific Research  
Institute of Oxygen Apparatus and Machinery, Moscow)

SUBMITTED: May 16, 1960

Card 2/2

DEYCH, M.Ye.; STEPANCHUK, V.F.; SALTANOV, G.A.; TSIKLARI, G.V.

Experimental study of condensation jumps. Teplofiz. vys. temp.  
2 no.5:789-796 S-0 '64. (MIRA 17:11)

1. Moskovskiy energeticheskiy institut.

USANOV, V.V., inzh.; Primalni uchastiye; NAURITS, L.N., inzh.; TSIKLAURI,  
G.V.; SHISHOV, Ye.V.; VSEKHSVYATSKIY, V.N.; tekhnik; PONOMAREVA,  
T.A.; tekhnik; SHCHERBAKOV, V.D.; tekhnik; SPESIVYKH, A.F., tekhnik

Heat exchange and resistance in an axisymmetric nozzle at  
low supersonic speeds. Trudy VNIIMASH no.5:61-83 '62.  
(MIRA 18:3)

L 35458-65 EWP(m)/EWT(1)/ECS(k)/EWA(d)/EWA(1) Pd-1 WW

ACCESSION NR: AP5007799

S/0281/65/000/001/0122/0128

AUTHOR: Deych, M. Ye.; Stepanchuk, V. F.; Saltanov, G. A.; Tsiklauri, G. V.

TITLE: Experimental studies of condensation discontinuities within an axially symmetric water vapor flow

SOURCE: AN SSSR, Izvestiya. Energetika i transport, no. 1, 1965, 122-128

TOPIC TAGS: condensation discontinuity, nozzle flow, supersonic vapor flow, water vapor flow, supercooled vapor flow, Laval nozzle

ABSTRACT: The study of high-velocity vapor flows in the presence of phase transitions is of great importance for the theory of steam turbines, atomic power engineering, etc. The present investigation is a continuation of previously published works (Izv. AN SSSR, Energetika i transport, 1964, no. 3; Teplofizika i tekhnicheskaya temperatur, 1964, no. 3; Ibid., 1964, no. 5) carried out at the Kafedra parovykh i gazovykh turbin (Department of vapor and gas turbines) of the MEI. The same references describe the experimental equipment and procedures used for the subsequent experimental studies of condensation discontinuities within the free flow following the cross-section of tapered nozzles and within the Wilson-Rayleigh flow of the Laval nozzle. Results within the range of flow of water vapor showed that

Card 1/2



DEYCH, M.Ye.; TSIKLURI, G.V.

Supercooling and structure of a stream of wet steam escaping  
from a tapering nozzle. Teplofiz. vys. temp. 2 no.3:454-463  
My-Je '64. (MIRA 17:8)

1. Moskovskiy energeticheskiy institut.

DEYCH, M.Ye., doktor tekhn.nauk, prof.; STEPANCHUK, V.F., dotsent, kand.tekhn.  
nauk; TSIKLAURI, G.V., inzh.

Distribution of static pressures in the flow of wet steam. Izv. vys.  
ucheb. zav.; energ. 7 no.8:111-115 Ag '64.

(MIRA 17:12)

1. Moskovskiy ordena Lenina energeticheskiy institut.



DEYCH, M.Ye. (Moskva); STEPANCHUK, V.F. (Moskva); SALTANOV, G.A. (Moskva);  
TSIKLAURI, G.V. (Moskva)

Experimental study of rapid condensation changes in an axisym-  
metrical accelerating flow of water vapor. Izv. AN SSSR, Energ. i  
transp. no.1:122-128 Ja-F '65. (MIRA 18:4)

CA

TSIKLIK.

PAGE(S) AND PARAGRAPH NO. (S)

23

**Impregnating pig-skin saddle leather.** A. A. Pchelín and M. B. Tsútkin. *Tsentral. Nauch.-Issledovatel. Inst. Kozhevnoi Prom., Sbornik Rabot No. 9, 1929* (1930). The impregnation of the chrome-sulfite cellulose and retanned pig saddle leather, by forming a water-resistant albumin tannin coagulate, on the flesh side, imparts low water absorption and permeability without a detrimental effect on other properties of the leather. The experiments are described.  
A. A. Büchtingk

ASME-FLA METALLURGICAL LITERATURE CLASSIFICATION

SHEBES, Mikhail Romanovich; TSIKLINAM Yevgeniya Aleksandrovna;  
ROZHDESTVENSKAYA, V.A., red.

[Problems in electromagnetic field theory; textbook for  
students of the technological faculties of the All-Union  
Correspondence Electrotechnical Institute of Communica-  
tions] Zadachnik po teorii elektromagnitnogo polia;  
uchebnoe posobie dlia studentov tekhnicheskikh fakul'te-  
tov VZEIS. Moskva, Red.-izd.otdel Vses. zaognogo  
elektrotekhn. in-ta sviazi, 1963. 199 p. (MIRA 18:3)

TSIKLIS, D.A.

Phase equilibria in the acetaldehyde water methane system at high pressures [with summary in English]. Zhur. fiz. khim. 32 no. 6:1367-1371 Ja '58.  
(MIRA 11:8)

1. Institut azotnoy promyshlennosti. Moskva.  
(Acetaldehyde)  
(Methane)  
(Phase rule and equilibrium)

TSIKLIS, D.S.; SHENDEREY, L.I.; KOFMAN, A.N. (Moscow)

Solubility of acetaldehyde in compressed gases. Zhur. fiz. khim.  
34 no.4: 768-772 Ap '60. (MIRA 14:5)  
(Acetaldehyde) (Nitrogen) (Hydrogen)

TSIKLIS, D.S.

Surface tension between two immiscible gases.

Report to be submitted for the 3rd Congress, European Federation of  
Chemical Engineering  
London, England 20-29 Jun 1962

1

Argon. N. S. Turocheshnikov and D. S. Tsiklis.  
 Mem. 51,441, July 31, 1937. The A. S. Sikes from the  
 tower used in the rectification of air is removed in vapor  
 state, rectified in a sep. tower, and purified chemically.

ASG. S. A. METALLURGICAL LITERATURE CLASSIFICATION

Equilibrium of Gases - Gas and Phase Equilibrium in Binomial Systems.

Moscow State Nitrogen Institute (-1942-)

"Equilibrium of Gases - Gas and Phase Equilibrium in Binomial Systems." Zhur.

Fiz. Khim., Vol. 17, No. 3, 1943

■-52052019



1ST AND 2ND CODES																										3RD AND 4TH CODES																									
PROCESSES AND PROPERTIES INDEX																																																			
<p>CA</p> <p>Apparatus for high pressures. I. R. Krichevskii and D. S. Tikhonov, <i>J. Phys. Chem. (U.S.S.R.)</i> 17, 115-23 (1948).--Design of app. for 10,000 kg./sq. cm. is reviewed, and construction of pressure-producing (pistons, valves, etc.) and pressure-measuring (a manganin resistance wire) devices are described. B. A.</p> <p>Moscow State Nitrogen Inst.</p> <p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																																																			
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2

Gas-gas equilibrium and phase equilibria in binary systems. I. R. Krichevskii and D. S. Tsiklis. *Acta Physicochim. U. R. S. S. 18*, 204-74(1943)(in English).—The existence of the equil. gas-gas at temps. above the crit. temp. of the less volatile was predicted by van der Waals, Onnes and Keesom but doubted by other authors. The equil. gas-gas was studied in the binary system  $\text{NH}_3\text{-N}_2$  at temps. from 90 to 148° and pressures up to 10,000 kg./sq. cm., in the  $\text{NH}_3\text{-CH}_4$  system at temps. from 45 to 100° and pressures up to 10,000 kg./sq. cm., and in the ternary system  $\text{NH}_3\text{-N}_2\text{-H}_2$  at a temp. of 100° and at pressures up to 5500 kg./sq. cm. The existence of limited mutual soly. of  $\text{NH}_3$  and  $\text{N}_2$  at temps. higher than the crit. temp. of  $\text{NH}_3$  was proved. A general qual. treatment of phase equilibria in binary systems is given. P. H. Rathmann.

Moscow State Nitrogen Inst.

ASR-56- METALLURGICAL LITERATURE CLASSIFICATION

TSIKLIS, D. S.

Extrapolation of data near the critical region. D. S.  
Tsklis. *J. Phys. Chem. (U.S.S.R.)* 18, 258-6 (1944).  
Expts. on the mutual soly. of  $N_2$ ,  $CH_4$ , and  $NH_3$  do not  
agree with the equation of Kritschewski and Hasanova  
(*C.A.* 33, 6104). B. A.

1ST AND 2ND COLUMNS										PROCESSES AND PROPERTIES INDEX										3RD AND 4TH COLUMNS									
<p>CA</p> <p>2</p> <p>Investigations under high pressures. D. S. Tsiklis. <i>Uspekhi Khim.</i> 14, 478-500(1945).—Review with 138 references, by topics: phase equilibria, soly. of gases in liquids, soly. of liquids in compressed gases, soly. of gases in gases, soly. of solids in liquids, soly. of solids in gases and of gases in solids, pressure-vol.-temp. relations of gases and liquids, compressibility of solids, fusion and polymorphic transitions, dielec. const., surface tension, chem. reactions, oxidation of methane, polymerization.</p> <p>N. Thon</p>																													
<p>AD-51A METALLURGICAL LITERATURE CLASSIFICATION</p>																													

1ST AND 2ND QUARTERS										3RD AND 4TH QUARTERS									
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<div style="position: absolute; top: 10px; left: 10px; font-size: 2em; font-weight: bold;">CA</div> <div style="position: absolute; top: 10px; right: 10px; font-size: 2em; font-weight: bold;">1</div> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); text-align: center;"> <p>Calibration of the manganin pressure gauge. D. S. Tuttle, <i>J. Tech. Phys. (U.S.B.R.)</i> 19, 940-2(1945). -- Hightman's method of calibration of the manometer based on the elec. resistance of manganin wire, with the aid of freezing Hg at 0° under pressure, has been modified insofar as the reading of the displacement of the piston has been replaced by the simpler and more accurate reading of the amt. of a liquid (benzine) which can be contained in the pressure vessel over the frozen Hg. The benzine is added by portions and it is necessary to wait 5-10 min. after each addn. to let the liquid attain the temp. of the thermostat. The app. uses 400 g. Hg; the amt. of benzine corresponding to the solidification of all the Hg can be estd. from the vol. change of Hg on freezing, 3.3%. Assuming the freezing pressure of Hg at 0° to be = 7640 kg./sq. cm. the measurements give for the relative change of elec. resistance of manganin as a function of pressure, <math>(1/R_0)(\Delta R/\Delta p) = 2.540 \times 10^{-6}</math> sq. cm./kg., N. Thon</p> </div>																			
ASM-A14 METALLURGICAL LITERATURE CLASSIFICATION																			
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SUBJECT										SUBJECT ONE ONLY									
SUBJECT TWO										SUBJECT ONE ONLY									

**PROCESS AND PROPERTIES INDEX**

**1ST AND 2ND ORDERS**

**3RD AND 4TH ORDERS**

**CA**

A pipet for the determination of ethylene. D. S. Tishler, Zorodovskaya Lab. 12, No. 2-3(1948). — The upper part of the pipet, an ordinary bubble chamber, is connected to an auxiliary pressure bulb and filled with 30% KOH or NaOH. The lower part, sep'd. from the upper part by an inclined diaphragm, is filled with glass tubes; in it C<sub>2</sub>H<sub>4</sub> is absorbed by Br water. A system of capillary tubes permits gas to be drawn from the buret of the gas analyzer into the upper part of the pipet (displacing the alkali soln. into the pressure bulb); adjustment of a 3-way stopcock closes the connection to the buret and opens a passage from the upper to the lower part of the pipet, so the sample can be led into the bromine soln. The absorption of C<sub>2</sub>H<sub>4</sub> is effected by manipulating the pressure bulb. After the absorption, the level of the Br water is adjusted, the gas is forced into the alkali-filled pipet to absorb the Br vapors remaining in the stopcock, and then it is returned from the pipet into the buret, and its vol. measured.

W. R. Henn

**ASB-ILA METALLURGICAL LITERATURE CLASSIFICATION**

**COMMON SYNONYMS**

**COMMON SYMBOLS**

**COMMON ABBREVIATIONS**

**COMMON UNITS**

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**COMMON INITIALS**

Heterogeneous equilibria in binary systems. 1) S. I. Lukh, *Dokl. Akad. Nauk SSSR* 20, 181 (1966).  
Mixture of  $\text{C}_2\text{H}_6$  with  $\text{N}_2$ ,  $\text{CH}_4$ , or  $\text{H}_2$  at 0.1 atmosphere show the effect of partial solubility of gases (cf. Kirichvskii and Ildshakov, *ibid.* 35, 3178) up to 7000 kg. sq. cm. Between 1000 and 7000 kg. sq. cm. a solid and a gas phase co-exist. The solid phase contains 1.5 and 18.0 mol. % of  $\text{N}_2$  at 1000 and 7000 kg. sq. cm. At the same pressures it contains 0.5 and 20.0 mol. % of  $\text{CH}_4$  and 1.4 and 7.0 mol. % of  $\text{H}_2$ . The equation of Kirichvskii and Kazanovskii (*ibid.* 40, 706) fits these data. For its application the fugacities of  $\text{CH}_4$  and  $\text{H}_2$  are calculated. J. J. Bikerman

25

**Limited Inter-Solubility of Gases Under High Pressures. System Sulfur Dioxide-Nitrogen. (In Russian.) D. S. Taiklia. *Journal of Physical Chemistry* (U.S.S.R.), v. 21, no. 3, 1947, p. 349-354.**

Binary mixtures of SO<sub>2</sub> with N<sub>2</sub> were investigated in the range 25° to 160°C., and at pressures up to 10,000 kg./sq. cm. Results are tabulated and charted. 11 ref.



27

B

Heterogeneous Equilibria in Binary Systems; Systems: Ethylene-Carbon Dioxide, Ethylene-Nitrogen. (In Russian.) D. S. Tsiklis. *Journal of Physical Chemistry* (U.S.S.R.), v. 21, no. 3, 1947, p. 355-359.

The above systems were investigated at 0°C., and at pressures up to 7000 kg./sq. cm. Results are tabulated and charted.

58/49T98

TSIKLIS, D. S.

USSR/Physics  
High Pressures  
Gases

Jun 49

"Device for the High-Pressure Compressing of Gas," D. S. Tsiiklis, N. E. Khazanova, State Inst of Nitrogen Ind, 2 pp

"Zavod Lab" Vol XV, No 6

Industry frequently requires large amounts of very pure gas compressed under high pressures. Describes a simple apparatus developed to fill this need. It is capable of compressing as up to 720 atm. Advantages are many, including: (1) ability to work with small amounts of gas; 58/49T98

USSR/Physics (Contd)

Jun 49

(2) no contact between lubrication oil and gas, thus insuring as purity; and (3) pressure which is obtainable is limited only by size and strength of apparatus.

58/49T98

TSIKLIS, D.S.; KRICHEVSKIY, I.R., professor, redaktor.

[Technology of physical and chemical high pressure research]  
Tekhnika fiziko-khimicheskikh issledovani pri vysokikh davleniyakh.  
Pod red. I.R.Krichevskogo. Moskva, Gos.nauchno-tekhn.izd-vo khim.  
lit-ry, 1951. 216 p.  
(MLRA 7:3)  
(Pressure (Physics))

TSIKLIS, D. S.

178T10

USSR/Chemistry - Liquefied Gases

1 Jan 51

"Limited Mutual Solubility of Gases at High Pressures.  
System Ammonia-Methane-Nitrogen," D. S. Tsiklis

"Dok Ak Nauk SSSR" Vol LXXVI, No 1, pp 97-99

Ternary mixt of ammonia-methane-nitrogen separate  
into 2 phases, i.e., show limited soly at definite  
temp and pressures just as other mixt (ammonia-  
nitrogen, ammonia-methane, sulfur dioxide-nitrogen,  
ammonia-nitrogen-hydrogen) contg polar component do.  
Phenomenon of barotropism /lower sp gr of phase richer  
in ammonia/ is also observed here.

178T10

TSIKLIS, D. S.

184T17

USSR/Chemistry - Compressed Gases 21 Jun 51

"Method of Determining Compressibility of Gases at High Pressures," I. P. Krichevskiy, D. S. Tsklis, State Sci. Res. and Plan. Inst. of Nitrogen Ind. (6/15/51), 78, 1951.  
"Dok Ak Nauk SSSR" Vol LXXVIII, No 6, pp 1169-1172

In detg compressibility of gases in steel vessels by applying elevated pressure on one side, it is difficult to est elastic and plastic deformation of vessel. Method described eliminates this fault by using newly designed app

184T17

USSR/Chemistry - Compressed Gases 21 Jun 51  
(Contd)

which has gasket instead of ordinary seal for the piston. Compression of gas proceeds under displacement of mercury into piezometer by liquid transmitting pressure. Tested method by compressing  $N_2$  at 500 to 3,000-6,000 at.

2 184T17

TSIKLIS, D. S.

USSR/Chemistry - Nitrogen

11 Jul 51

"Compressibility of Nitrogen at Pressures up to  
10,000 Atmospheres," D. S. Tsiklis, State Res and  
Project Inst of Nitrogen Ind

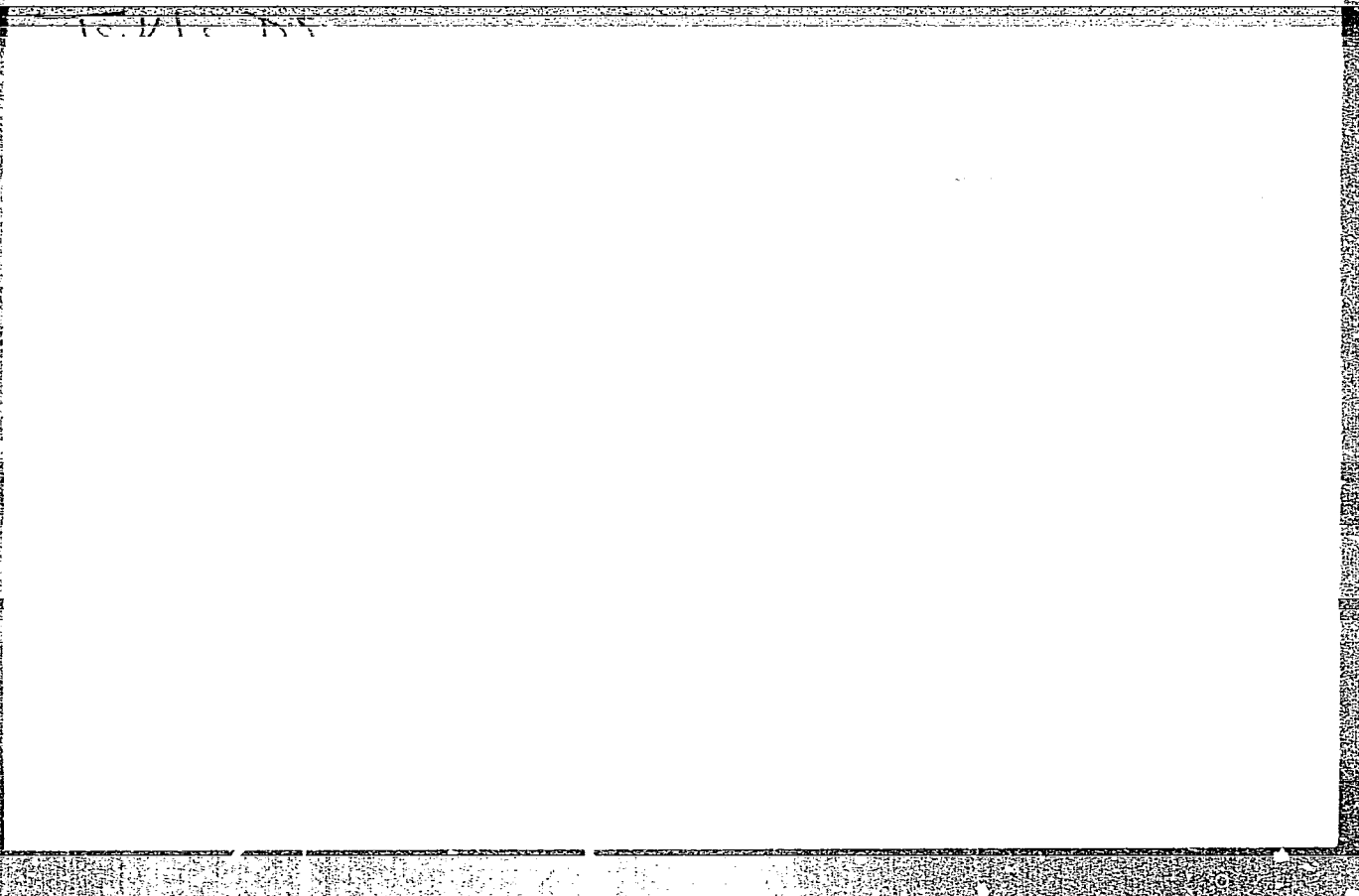
"Dok Ak Nauk SSSR" Vol LXXIX, No 2, pp 289, 290

Gives the compressibility of nitrogen at 500°, 1000°,  
and 1500° for pressures up to 10,000 atm measured  
at intervals of 500 atm. Compares the exptl values  
with values calcd from Tait's eq.

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"APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001757030001-7



APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001757030001-7"

TSIKLIS, D. S.

Pressure (Physics)

"Technique of physical-chemical investigations at high pressures." Reviewed by  
M. S. Gonikberg. Usp.khim., 21, No. 1, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1952. UNCLASSIFIED



TSIKLIS, D.S.

PA 234T12

USSR/Chemistry - Liquid Gases, Am-  
monia 1 Apr 52

"Solubility of Liquid Ammonia in Compressed Nitrogen at Pressures Up to 4,000 Atmospheres,"  
D. S. Tisklis, State Sci Res and Planning Inst  
of Nitrogen Ind

"Dok Ak Nauk SSSR" Vol 83, No 4, pp 585-588

Soly diagrams for liquid ammonia in nitrogen and nitrogen in liquid ammonia were constructed. Measurements were made at 75 and 800 and at pressures of 0 to 4,000 atm. At 750 liquid

234T12

ammonia has a min soly in nitrogen at 500 atm. The soly increases with a max at 1,000 atm. At 800 the soly is greater with a min at 600 atm. At 1,100 atm the soly is crit, increasing very much at a slight increase in pressure. When nitrogen is dissolved in liquid ammonia at 750, its max soly lies between 1,000 and 1,300 atm.

234T12

TSIKLIS, D. S.

PA 245T5

USSR/Chemistry - Gaseous Solutions 11 Oct 52

"The Limited Mutual Solubility of Gases at High Pressures in the Ammonia-Nitrogen System," D. S. Tsiiklis

"Dok Ak Nauk SSSR" Vol 86, No 5, pp 993-995

Refers to previous research on the ammonia-nitrogen system, in which the course of the critical curve in that system was followed up to 1480 and to a pressure higher than 9,000 kg/sq. cm. He attempted to increase the pressure span in order to examine the furthestmost course of the critical curve. For this purpose, author constructed an apparatus with which experiments could be conducted under pressures reaching 20,000 kg/sq. cm. In actual experiments with this apparatus, reached a pressure of 18,000 kg/sq. cm. Beyond a pressure of 20,000 kg/sq. cm, the author points out, other methods of constructing an apparatus would have to be applied. With the new apparatus, investigated the ammonia-nitrogen system, at temperatures of 1480 to 1750, and at pressures up to 16,700 kg/sq. cm. These investigations showed that the critical curve, in the investigated interval of temperatures and pressures, heads toward still higher temperatures and pressures. Presented by Acad S. I. Vol'fkovich. 7 Aug 52.

(3)

245T5

USSR/Chemistry - Helium

21 Oct 52

"The Limit of Intersolubility of Gases at High Pressures in the Helium-Ammonia and Helium-Carbon Dioxide Systems," D. S. Tsiklis, State Sci Res and Planning Inst of Nitrogen Ind

"Dok Ak Nauk SSSR" Vol 86, No 6, pp 1159-1161

He gas -  $\text{NH}_3$  gas equil starts at the crit point of ammonia (115 kg/sq cm at 132.90°). The crit pressure of the helium-ammonia system increases with temp very slowly in comparison with ammonia-nitrogen. The helium-carbon dioxide system is similar to the above in

234T36

that the range of gas-gas equil for this system also lies above the crit point of the less volatile component ( $\text{CO}_2$ ). The crit pressure, however, increases rapidly with temp. Presented by Acad S. I. Vol'fkovich 7 Aug 52.

234T36

TSIKLIS, D. S.

TSIKLIS, D. S.

Journal of Applied Chemistry  
June 1954  
Industrial Inorganic Chemistry

①<sup>2</sup>  
/ Formation of ammonia in adiabatic compression of nitrogen-hydrogen mixtures. D. S. Tsklis (*Dokl. Akad. Nauk. SSSR*, 1953, 91, 327-329).—Rapid compression of a mixture of  $N_2$  +  $3H_2$  to 3000–10,000 atm. (2000–4000° K.) yields 3–20% of the theoretical amount of  $NH_3$ , predicted by extrapolation from published figures for equilibrium constants at lower temp.; the yield is strongly affected by the condition of the surface. R. C. MURRAY.

11-10-54

TSIKLIS, D. S.

B. T. R.  
Vol. 3 No. 3  
Mar. 1954  
Chemistry-Physioal

3072\* Oxidation of Methane Under Conditions of Adiabatic Compression. (Russian.) M. S. Furman and D. S. Tsihls. *Doklady Akademii Nauk SSSR*, v. 01, no. 3, July 21, 1953, p. 507-508.  
Data show that even under atmospheric pressure and temperatures, disintegration of carbon dioxide cannot proceed. None of the tests gave evidence of elementary carbon formation. Graph, table, 8 ref.

Isiklis, D.S.

U S S R

V Compressibility of ammonia at pressures up to 10,000 atmospheres. D. S. Tsiklis. *Doklady Akad. Nauk S.S.S.R.* 91, 889-90(1953); *ibid.* C.A. 47, 34. —By the method described earlier, the molar vol. of  $\text{NH}_3$  was measured at pressures from 1,000 to 10,000 atm. and at temp. 50, 100, 62 and 160°. The exptl. values were compared with values calcd. from the formula  $V_P = V_0 \{1 - C \log[(B + P)/(B + P_0)]\}$  where  $V_0$  is the zero reading for the vol.,  $C$  and  $B$  are const.  $C$  is independent of pressure,  $P$ , and temp. and is equal to 0.3084.  $B$  is temp. dependent.  $P_0 = 1000$  atm. is the zero reading for the pressure. The greatest deviation between calcd. and exptl. values is 0.6%.

J. Rovtar Leach

TSIKLIS, D. S.

USSR/Chemistry - Helium

21 Aug 53

"The Limited Mutual Solubility of Gases in the System Helium - Ethylene at High Pressures," D. S. Tsiiklis, Sci-Res and Project Inst of the Nitrogen Industry

DAN SSSR, Vol 91, No 6, pp 1361-1363

Observed appearance of a meniscus in a mixt of 53%  $C_2H_4$  + 47% He at various temps and pressures (16-150°, 225-10000 kg/cm<sup>2</sup>) indicating limited soly and the presence of distinct phases. Presented by Acad S. I. Vol'fkovich 30 May 53.

269T14

*TSIKLIS, D.S.*  
USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria,  
Physical-Chemical Analysis, Phase Transitions.

B-8

Abs Jour: Referat. Zhurnal Khimiya, No 2, 1958, 3809.

Author : D.S. Tsiklis.

Inst : State Scientific Research and Planning Institute of Nitrogen  
Industry.

Title : Solubility of Liquid Ammonia in Compressed Nitrogen Under  
Pressures up to 4000 Atmospheres.

Orig Pub: Tr. Gos. n.-i. i proyekt. in-ta azotn. prom-sti, 1954, vyp. 3,  
12-17.

Abstract: The solubility of liquid ammonia (I) in nitrogen (II) compressed  
to 4000 abs. atm. at 75 and 80°, as well as of II in I at pres-  
sures from 1600 to 2600 abs. atm. was studied. The point of the  
maximum on the solubility curve of I in II converts into a cusp  
approaching the temperature of the double homog. point (at  
which the critical points of gas-gas and liquid-gas coincide;

Card : 1/2

-45-



TSIKLIS, Daniil Semenovich

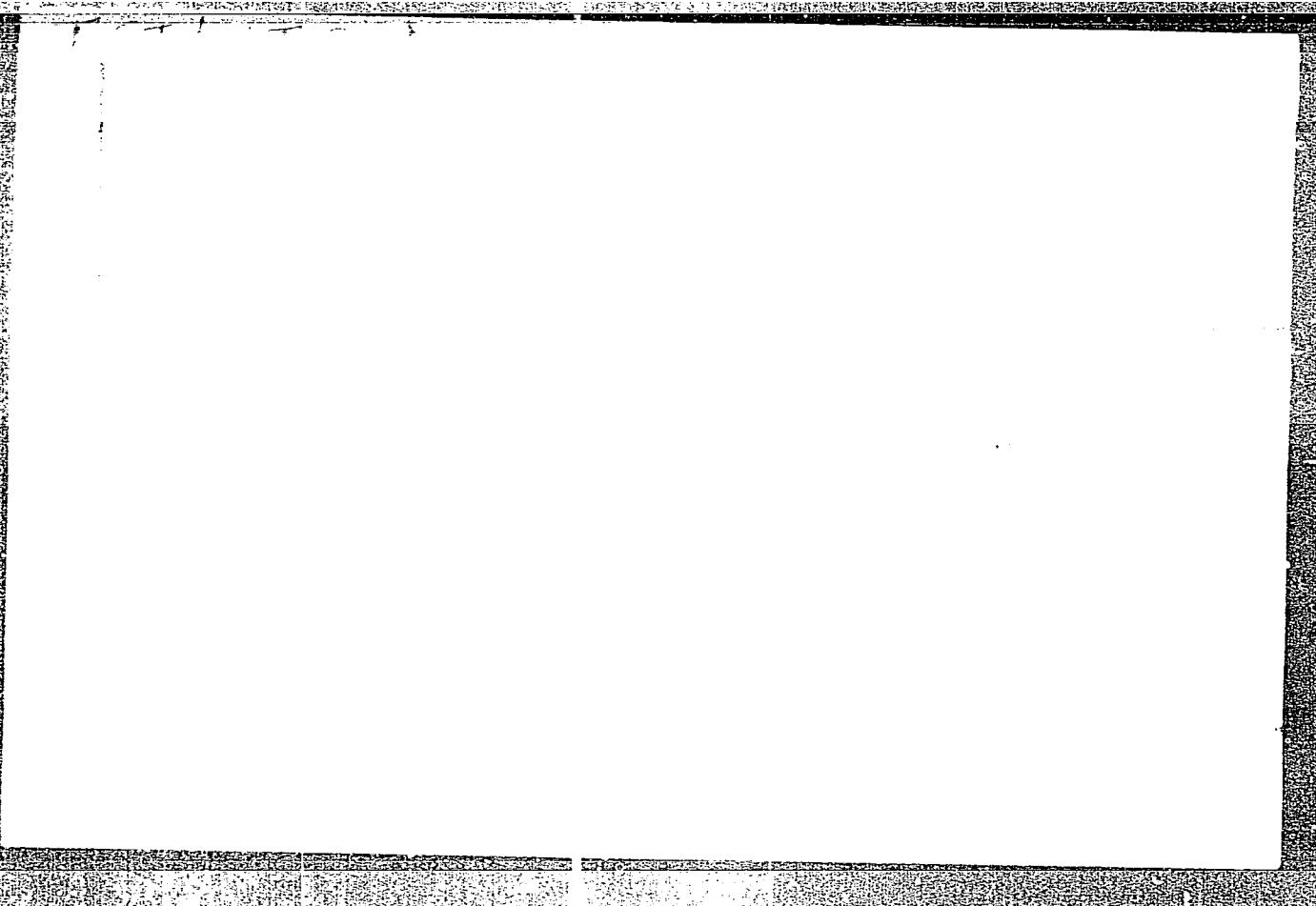
(State Scientific Research and Planning Inst of Nitrogen Industry, of the Min of Chemical Industry USSR), Academic degree of Doctor of Chemical Sciences, based on his defense, 13 June 1955, in the Council of Labor Red Banner Scientific research physico-chemical Inst imeni Karpov, of his dissertation entitled: "Equilibrium between phases in systems and gas phases under very high pressure."

Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no. 24, 26 Nov 55, Byulleten' MVO SSSR, No. 20, Oct 57, Moscow, pp 22-24, Uncl. JPRS/NY-471

**"APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757030001-7**



**APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757030001-7"**

*Tsiklis, D. S.*

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 34/51

Authors : Tsiklis, D. S.

Title : ~~\_\_\_\_\_~~  
Limited reciprocal solubility of gases in a helium-propane system  
at high pressures

Periodical : Dok. AN SSSR 101/1, 129-130, Mar. 1, 1955

Abstract : Brief thesis is presented on the limited reciprocal solubility phenomena of gases in a system consisting of two nonpolar gases helium - propane -. The data regarding the limited solubility of the gases were gathered at temperatures of 105, 110, 120, 130 and 150° and pressures ranging up to 5000 kg/cm<sup>2</sup>. Four references: 3 USSR and 1 Dutch (1907-1953). Graphs.

Institution : State Scientific Research and Planning Institute of Nitrogen  
Industry

Presented by : Academician S. I. Vol'fkovich, September 11, 1954

Carbon dioxide sorption in ammoniacal copper carbonate solution  
from 150 to 400 mm Hg. by A. N. Koshman, Khim.  
carbonate solns. of varying concn. was studied in a rocking  
autoclave at 50 and 150 kg/cm<sup>2</sup> total pressure at 3.20

for  
MIT

TSIKLIS, D. S.

Category: USSR / Physical Chemistry.  
Thermodynamics. Thermochemistry. Equilibrium Physico-  
chemical analysis. Phase transitions.

B-8

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29863.

Author : Tsiklis D. S.

Inst : not given

Title : Calculation of Volatility of Some Gases.

Orig Pub: Zh. fiz. khimii, 1956, 30, No 5, 1182-1183

Abstract: For the calculation of the volatility of gases under high pressure an equation is proposed which has been derived by means of a general thermodynamic correlation, on the basis of Tait equation. Verification of the equation using data on compressibility of nitrogen at 6000 and 10000 atmospheres resulted in a deviation from the results of the usual calculation procedure (according to  $\int V dp$ ) of less than 2%.

Card : 1/1

-7-

✓ Methods for studying reactions with gaseous oxygen at  
pressures up to 10 atmospheres. S. L. Kishin, Inst.  
Chem. Acad. Sci. USSR, Div. Chem. Phys., 30, 1961, 1001.

17

salts formed a straight line on the log  $P$ - $1/T$  coordinates.  
 The partial pressure of  $H_2O$  was affected little by the compn.  
 of the soln. The heats of vaporization of  $NH_3$ ,  $H_2O$ , and  
 $CO_2$  varied with the soln. concn.:  $\Delta H_{NH_3} = 8,300-13,800$ ;  
 $\Delta H_{H_2O} = 9900-11,000$ , and  $\Delta H_{CO_2} = 10,000-14,600$  cal./mol.  
 W. M. STEINBERG

PEREVERTKIN, S.M.; KHRAPOVITSKIY, Yu.S., kand.tekhn.nauk; TSIKLIS, D.S.,  
doktor khim.nauk

Compressibility of some liquids at high pressures. Trudy GIAP  
no.7:26-32 '57. (MIRA 12:9)  
(Liquids) (Compressibility)



TSIKLIS, D.S., doktor khim. nauk; KOFMAN, A.N.

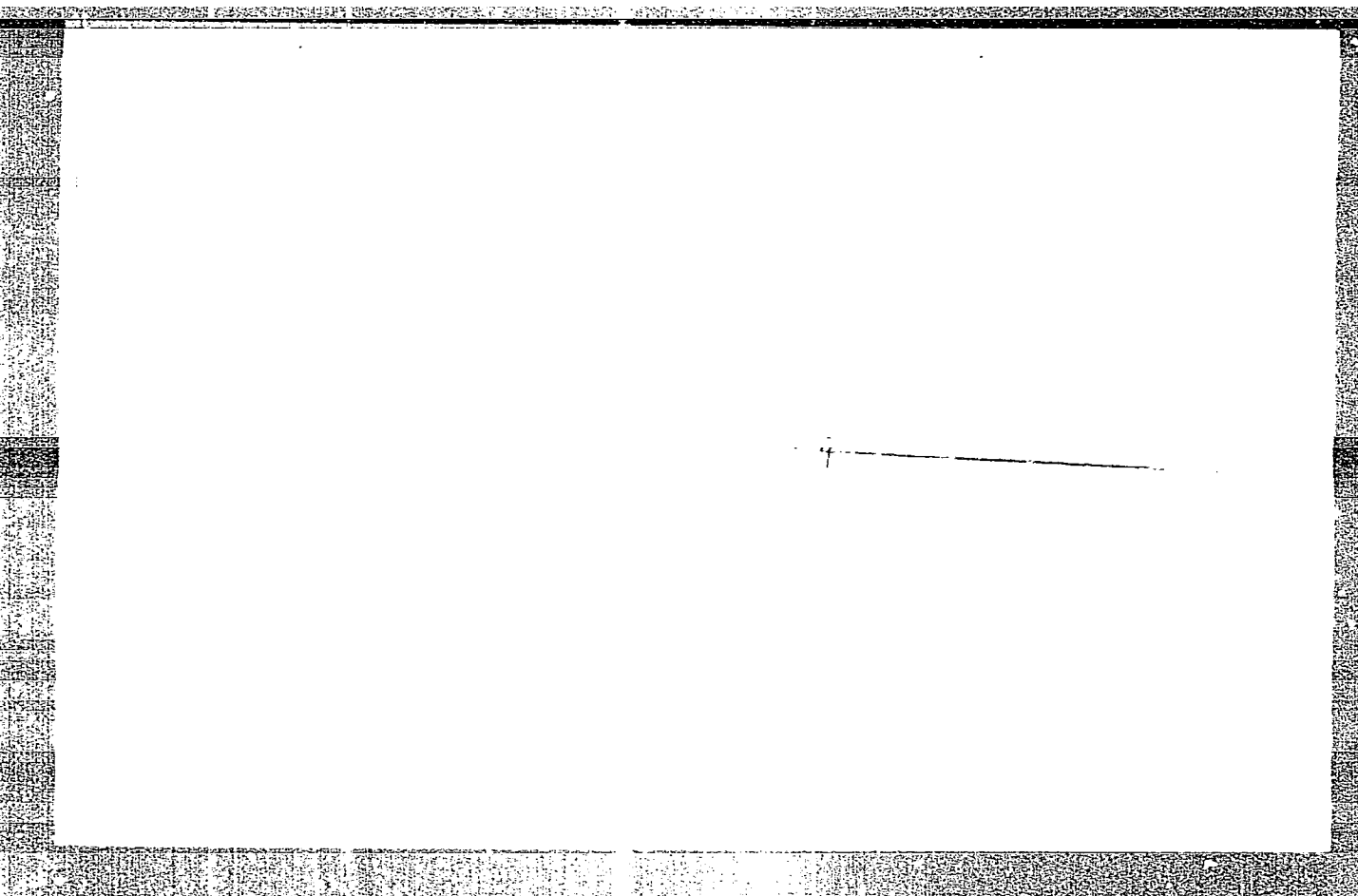
Partial pressures of ammonia, water, and carbon dioxide over  
copper-ammonia solutions. Trudy GIAP no.8:21-30 '57.

(MIRA 12:9)

(Vapor pressure)

"APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001757030001-7



APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001757030001-7"

Tsiklis, D. S.

AUTHORS: Tsiklis, D. S., Shvarts, Ya. D.

76-10-19/34

TITLE: Gas-Liquid Equilibrium in the System Acetaldehyde-Methane Under High Pressures (Ravnovesiye zhidkost' - gaz v sisteme atsetal'degid - metan pri vysokikh davleniyakh).

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 10, pp. 2302-2305 (USSR)

ABSTRACT: Referring to the paper of one of the authors (Tsiklis) in Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, p. 100, the solubility of methane in acetaldehyde and of the acetaldehyde in methane at a pressure of 100 at and temperatures of from 0 to 40° C is determined here. The solubility of the methane in acetaldehyde was determined at 1,20 and 40° C and pressures up to 90 at. This can be expressed by the equation of I. R. Krichevskiy, and N. Ye. Khozanova, for solutions of polar liquids in non-polar gases. The solubility of the acetaldehyde in compressed methane was determined at 1,20 and 40° C and pressures up to 110 at. The equation of Krichevskiy-Khazanova gives the data for the solubility of the

CARD 1/2

Gas-Liquid Equilibrium in the System Acetaldehyde-Methane 76-10-19/34  
Under High Pressures

acetaldehyde in compressed methane satisfactorily.  
The equation see "Acta Physicochem." 15, 327, 1941.  
There are 2 figures, 3 tables, 7 Slavic references.

ASSOCIATION: Institute for Nitrogen Industry, Moscow (Institut  
azotnoy promyshlennosti, Moskva).

SUBMITTED: July 24, 1956

AVAILABLE: Library of Congress

CARD 2/2

PHASE I BOOK EXPLOITATION

828

Tsiklis, Daniil Semenovich

Tekhnika fiziko-khimicheskikh issledovaniy pri vysokikh davleniyakh (Technology of Physical and Chemical High Pressure Research) 2nd ed., rev. and enl. Moscow, Goskhimizdat, 1958. 301 p. 4,000 copies printed.

Ed.: Levantovskaya, I.I.; Tech. Ed.: Lyr'ye, M.S.

**PURPOSE:** The book is intended for engineers and scientists working in the field of physicochemical research at high pressures.

**COVERAGE:** This is a manual on research techniques at high pressures. It describes problems of materials selection, construction of apparatus and experimental procedure. Methods are also discussed for producing and measuring high and ultrahigh pressures, for establishing high temperatures and high pressures simultaneously, and for mixing operations under pressure. The book presents methods for investigating phase equilibrium, compressibility of gases and liquids under pressure, measuring surface tension on the liquid - gas boundary and wetting of solids in the presence of compressed gases. Optical instruments are described for visual observations, etc. References appear at the end of each chapter.

Card 1/9

Technology of Physical and Chemical (Cont.) 828

There are 231 references of which 59 are Soviet, 138 English, 28 German, 5 French and 1 Italian.

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AVAILABLE: Library of Congress	
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TSIKLIS, D.S.; MUSHKINA, Ye.V.; SHENDEREV, L.I.

Phase equilibria in the ethylene water system at high  
temperatures and pressures [with summary in English]. Inzh.-fiz.  
zhur. 1 no.8:3-7 Ag '58. (MIRA 11:8)

1.Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut  
azotnoy promyshlennosti, Moskva.  
(Phase rule and equilibrium)

5(4), 5(1)

AUTHOR:

Tsiklis, D. S.

SOV/64-58-7-4/18

TITLE:

The Solubility of Lubricating Oil in Compressed Ethylene  
(Rastvorimost' smazochного masla v szhatom etilene)

PERIODICAL:

Khimicheskaya promyshlennost', 1958, Nr 7, pp 404 - 406 (USSR)

ABSTRACT:

A. N. Kofman participated in the experiments carried out. It is known that compressed gases dissolve solids and liquids (Ref 1). Ethylene, for instance, dissolves at 50° and 240 atmospheres absolute pressure up to 17 mol % naphthalene (Ref 2). The solubility of lubricating oil of the type "S" in ethylene at 50° and 3700 kg/cm<sup>2</sup> was investigated. The apparatus used is described in publications (Ref 3). Instead of the piezometer of this apparatus one with an electromagnetic stirrer was used (diagram). The vapor pressure of the oil was determined according to the diagram of coke (Ref 4). A molecular weight of 352 is given. A special valve was constructed to deliver the ethylene and to take the sample (diagram). The properties of the lubricating oil investigated (type "S"; according to GOST 1707-42/49 are mentioned. It was found that in the pressure range from

Card 1/2

The Solubility of Lubricating Oil in Compressed  
Ethylene

SOV/64-58-7-4/18

100 to 2000 kg/cm<sup>2</sup> the solubility of this oil increased and decreased again after the maximum (at 2000 kg/cm<sup>2</sup>). The molecular weight of the oil that dissolved in ethylene was 650. This demonstrates that ethylene mainly dissolves the heavy oil fraction. There are 3 figures, 1 table, and 6 references, 4 of which are Soviet.

Card 2/2



TSIKLIS, D.S.; KHODEYKOVA, S.M.

Limited mutual solubility of gases at high pressures in systems  
containing liquid in a supercritical state. Inzh.-fiz.zhur.  
no.11:62-66 N '58. (MIRA 12:1)

1. Institut azotnoy promyshlennosti, g. Moskva.  
(Systems (Chemistry)) (Solubility)

AUTHOR: Tsiklis, D.S. SOV/76-32-b-21/4b

TITLE: The Phase Equilibrium in the System Acetaldehyde-Water-Methane  
High Pressures (Fazovyje ravnovesiya v sisteme atsetal'degid-  
-voda - metan pri vysokikh davleniyakh)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 6,  
pp. 1367-1371 (USSR)

ABSTRACT: In continuation of an earlier paper the solubility of the  
acetaldehyde and water in a solution containing 43,5%  
acetaldehyde in compressed methane was investigated at  
pressures up to 80 atmospheres absolute pressure and at  
temperatures from 1 to 40°C, as well as the solubility of  
methane in this solution. The apparatus used was already  
described. The partial pressures as well as the total pressure  
at the given temperatures were also determined. The  
experimental work was carried out by A. N. Kofman, L. I.  
Shenderay and S. M. Khodeyeva. The Henry coefficient was  
calculated from given data according to a mentioned formula;  
from these values the solubility was calculated in order to  
be able to compare these values with the experimental data.

Card 1/3

The Phase Equilibrium in the System/ Acetaldehyde -  
-Methane at High Pressures Water - SOV/ 76-52-6-27/46

However, the volatility of acetaldehyde in the gaseous phase above the aqueous solution should have been known. Instead, the partial pressures were used in its place, using a correction according to the equation by Poynting. In the calculation it was assumed that the main quantity of acetaldehyde in the gaseous phase is not bound in complexes. The experimental results obtained were evaluated according to the equation by I. R. Krichevskiy and N. Ye. Khazanova (Ref 7). A good agreement with the demands was obtained. The greater deviations are explained by the fact that the formation of hydrates in the gaseous phase could not be taken into account; the accuracy is, however, sufficient, for technological calculations. Finally the author thanks Professor I. R. Krichevskiy. There are 2 figures, 5 tables, and 7 references, 5 of which are Soviet.

ASSOCIATION: Institut azotnoy promyshlennosti, Moskva (Moscow, Institute of Nitrogen Industry)

SUBMITTED: February 20, 1957  
Card 2/3

The Phase Equilibrium in the System Acetaldehyde  
Water-Methane at High Pressures. SOV/76-32-6-27/46

1. Acetaldehyde-methane-water systems--Analysis
2. Methane--Solubility
3. Pressure--Chemical effects
4. Chemical equilibrium

Card 3/3

AUTHORS: Krichevskiy, I. R. Tsiklis, D. S. SOV/76-32-6-33/46

TITLE: Discussion (Diskussiia)  
Answer to the Paper by V. Yu. Urbakh "Is There a Finite  
Mutual Solubility of Gases?" (Otvét na stat'yu V. Yu.  
Urbakha "Sushchestvuyet li ogranichennaya vzaimnaya  
rastvorimost' gazov ?")

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 6, pp.  
1407-1409 (USSR)

ABSTRACT: It is pointed out that already Kamerlingh Onnes and Keesom  
(Ref 1) laid down a theory on the equilibrium gas-gas,  
besides, corresponding notes are to be found in the book by  
Van der Waals-Konstamm (Ref 2). The main argument mentioned  
by Urbakh was mentioned by Batelli in 1892, it was, however,  
refuted as may be seen from the paper by A. G. Stoletov  
(Ref 3). The assumptions by A. Eucken (Ref 4) are explained  
by the theory of the phase transitions by L. D. Landau  
(Ref 6), while the statements by A. Ye., Sheyndlin (Ref 5)  
were again refuted by A.M. Rozen (Ref 7). In the further  
considerations contrary to the ideas by Urbakh the papers  
by Vogel (Ref 8), D. P. Konovalov (Ref 9) and I. R.

Card 1/2

Discussion. Answer to the Paper by V.Yu. SOV/76-32-6-33/46  
Urbakh "Is There a Finite Mutual Solubility of Gases?"

Krichevskiy and N. Ye Khazanova (Ref 10) are mentioned and it is found that for reasoning his assumption Urbakh had to develop a new theory in the place of the Gibbs-Stoletov theory, as otherwise the statement of a certain role played by surface phenomena in the thermodynamics of critical phenomena is without any scientific value and of no importance, just as the second assumption concerning the possibility of a lengthening of the curve of equilibrium liquid-gas beyond the critical point was refuted in the above mentioned papers. There are 10 references, 5 of which are Soviet.

ASSOCIATION: Institut azotnoy promyshlennosti, Moskva  
(Moscow, Institute of Nitrogen Industry)

SUBMITTED: November 11, 1957

1. Gases--Solubility
2. Gases--Theory
3. Gases--Phase studies
4. Gases--Thermodynamic properties

Card 2/2

AUTHORS: Tsiklis, D. S., Svetlova, G. M. (Deceased) SOV/76-32-7-6/45

TITLE: The Solubility of Gases in Cyclohexane (Rastvorimost' gazov v tsiklogeksane)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 7, pp.1476-1480 (USSR)

ABSTRACT: Since, with one exception, no data are available on the solubility of chlorine, hydrogen chloride, nitrosyl chloride, nitrogen oxide and hydrogen sulfide in cyclohexane in publications the authors in the present paper determined these values and gave their data. The measurements were carried out according to the static method by the determination of the total pressure above the solution at certain temperatures (10, 20 and 40°) and concentrations of the solution. A schematic representation of the experimental equipment is given from which may be seen that a spring with a mirror served as manometer with a light pencil being reflected to a scale. The checking system of the equipment was housed in a thermostat and the gases used had been dried by freezing before the experiments; the purification of the cyclohexane was carried out by G. A. Sorina. To avoid a possible photo-

Card 1/2

The Solubility of Gases in Cyclohexane

SOV/76-32-7-6/45

chemical reaction the authors used dark glass and brass filters. From the results obtained may be seen that the solubility of the gases investigated decreases with an increase of the temperature. The solubility of hydrogen chloride and nitrogen oxide is subject to the Henry law, while the solubility of nitrosyl chloride, chlorine and hydrogen sulfide does not vary linearly as the pressure, and can be expressed by the equation according to Krichevskiy-Il'inskaya. The heats of solution of the gases investigated were calculated and given in a table. The deviations of the determinations from the values obtained by interpolation are given to be 5 % in the case of nitrosyl chloride and 10-15 % for the other gases, respectively. Finally the authors thank I. R. Krichevskiy. There are 2 figures, 4 tables, and 3 references, 2 of which are Soviet.

ASSOCIATION: Institut azotnoy promyshlennosti, Moskva (Moscow, Institute of Nitrogen Industry)

1. Gases--Solubility 2. Gases--Temperature factors 3. Gases  
--Heat of solution 4. Cyclohexanes--Properties

Card 2/2 :



5(4)

SOV/76-33-9-20/37

AUTHORS:

Isiklis, D. S., Kofman, A. N., Shenderoy, L. I.

TITLE:

Phase- and Volumetric Behavior of Solutions of Acetylene in Acetone

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 9, pp 2012-2016 (USSR)

ABSTRACT:

G. S. Cherkasova and L. F. Abramova (NIAT) took part in the experimental part of the work under review. As there are no accurate data in publications concerning the volumetric behavior of solutions of acetylene (I) in acetone (II), the present investigation was carried out following suggestions made by Yu. V. Dalago and G. F. Chepelyugin. The solubility of (I) in (II) was measured according to the statistical method by measuring the total pressure over the solution at a given temperature and known concentration of the solution; a special arrangement was used for the purpose (Fig 1). The device essentially consists of a graduated tube with tap, glass manometer (as zero instrument), mercury gauge, and portioning vessel. The working procedure is described. The solubility of (I) in (II) was measured at -40, -50, -60, -70 and -80°C at a

Card 1/2

SOV/76-33-9-20/37

Phase- and Volumetric Behavior of Solutions of Acetylene in Acetone

pressure up to 1 atm, and the volume of the solution was determined. To interpret results for the phase equilibrium, the known equation (1) (Ref 5) was applied and the values obtained are specified (Table 1). With the (I)-concentration the volume of the solution rises noticeably (Table 2). By extrapolation, the solubility of (I) in (II) was determined at  $-80^{\circ}\text{C}$  even for a pressure above 1000 torr (Table 3). The solubility of (I) in (II) may be expressed by the equation of I. R. Krichevskiy - A. A. Il'inskaya. The solution heat of (I) in (II) was likewise calculated. Finally, gratitude is expressed to I. R. Krichevskiy for valuable advice. There are 3 figures, 3 tables, and 8 references, 5 of which are Soviet.

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AUTHORS: Gonikberg, M. G., Tsiklis, D. S., Opekunov, A. A.

TITLE: On the Problem of Reinforcement of High Pressure Containers

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ABSTRACT: Recently a method of replacing the tensile stresses in constructions by compressive stresses, is applied in the construction of high pressure apparatus. The fact is used as well, that the compressive strength of materials like tungsten carbide and hard steels is by 3 to 4 times larger than tensile strength. This principle for instance, is applied to that construction, which is known under the name "tetrahedral anvil" and which makes it possible already now to produce pressures of 200000 atmospheres within the apparatus at very high temperatures. In this construction 4 pistons move in a highly viscous medium (pyrophyllite) towards a common center. The triangular plane frontal areas of these pistons (with a pyrophyllite intermediate layer between them) form a tetrahedral high-pressure "container". 2 problems are solved by such a construc-

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On the Problem of Reinforcement of High Pressure  
Containers

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tion: The backing of the moving piston and the production of a high-pressure container, with extremely high strains and high temperatures. These problems, however, may be solved separately, using the same principle, which underlies the tetrahedral anvil. First the construction of a high-pressure container with high strength is discussed. At the internal walls of the container a plastic layer is formed, which is fixed by an elastic layer. With increasing extension of the plastic layer, the elastic layer becomes thinner and thinner and, at a certain pressure, a break occurs. As was shown by experiments, high pressure containers break from outside. Now, a high pressure container may be assumed, which is produced of 2 layers, of an external elastic bandage and of an internal layer, which is composed of several hard wedges (compare R. V. Mil'vitskiy (Ref 3)). The material of these wedges reacts not to extension, but to pressure and, therefore, withstand considerably higher pressure than the walls of a customary cylinder. An apparatus with a high-pressure container, which is schematically illustrated by a picture, was developed and built by the authors,

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